

**REQUIREMENT MODEL OF SCHOOL MANAGEMENT SYSTEM FOR ADULT  
COMMERCIAL SECONDARY SCHOOL IN SOMALIA (ACSSMS)**

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**REQUIREMENT MODEL OF SCHOOL MANAGEMENT SYSTEM FOR ADULT  
COMMERCIAL SECONDARY SCHOOL IN SOMALIA (ACSSMS)**

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partial fulfillment of the requirements for the degree**

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**By**

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## ABSTRACT

*To develop a system, it is necessary for the system's analyst to provide a model. In order to produce this model, the analyst must identify the user's requirement first. Requirement model is one of the techniques used to model out the user's requirement for a specific system before the development of that system. In other words, requirement model gives a view of the user's requirement for a particular system. The purpose of this study is to create a requirement model as a basis to develop school management system for Adult Commercial Secondary School in Somalia. So, during this study, the UML graphical notation was used to model out the requirement model of the proposed school management system, and the requirement model was designed and presented using different UML tools (e.g., use case diagram, use case specifications, activity diagram, sequence diagram, collaboration diagram and class diagram), and supporting textual information. Also, a small prototype was then developed and presented in this study, which covers some of the main functional requirements, so as to assist the school in managing their daily operations effectively and more efficiently. Thus, this study is believed to be a step forward and very crucial guidance for Adult School in Somalia to be able to give this model to system developers to build the proposed school management system.*

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## TABLE OF CONTENTS

PERMISSION TO USE.....	i
ABSTRACT.....	ii
ACKNOWLEDGEMENT .....	iii
TABLE OF CONTENTS.....	iv
LIST OF FIGURES .....	vii
LIST OF TABLES .....	viii
LIST OF ABBREVIATIONS.....	ix
CHAPTER ONE: INTRODUCTION.....	1
1.0 BACKGROUND OF THE STUDY .....	1
1.1 PROBLEM STATEMENT.....	2
1.2 RESEARCH QUESTIONS .....	3
1.3 OBJECTIVE OF THE STUDY .....	4
1.4 SCOPE OF THE STUDY.....	4
1.5 SIGNIFICANCE OF THE STUDY .....	5
1.6 EXPECTED DELIVERABLE .....	5
1.7 REPORT STRUCTURE.....	5
1.8 CHAPTER SUMMARY .....	6
CHAPTER TWO: LITERATURE REVIEW.....	7
2.0 INTRODUCTION .....	7
2.1 REQUIREMENTS .....	7
2.2 REQUIREMENT MODEL .....	8
2.2.1 REQUIREMENT MODEL FOR THE MANAGEMENT OF ELECTRONIC RECORDS.....	9
2.3 MANAGEMENT INFORMATION SYSTEM.....	10
2.3.1 BASIS FOR THE EXISTENCE OF INFORMATION SYSTEMS .....	11
2.3.2 MANAGEMENT INFORMATION SYSTEMS IN SCHOOLS .....	12
2.4 SCHOOL MANAGEMENT SYSTEM.....	13
2.5 ADULT LEARNING DOMAIN .....	14
2.6 UNIFIED MODELING LANGUAGE.....	14
2.6.1 USE CASE DIAGRAM .....	15
2.6.2 USE CASE SPECIFICATIONS.....	15
2.6.3 CLASS DIAGRAM.....	15
2.7 CHAPTER SUMMARY .....	15

<b>CHAPTER THREE: RESEARCH METHODOLOGY .....</b>	<b>16</b>
3.0 INTRODUCTION .....	16
3.1 DESIGN RESEARCH IN INFORMATION SYSTEMS METHODOLOGY .....	16
3.1.1 PHASE 1: AWARENESS OF PROBLEM .....	17
3.1.1.1 DATA COLLECTION .....	18
3.1.1.2 PRIMARY DATA .....	18
3.1.1.3 INTERVIEWING .....	18
3.1.2 PHASE 2: SUGGESTION .....	19
3.1.3 PHASE 3: DEVELOPMENT .....	19
3.1.3.1 PROTOTYPING METHODOLOGY .....	19
3.1.3.2 DEVELOPMENT TOOLS .....	21
3.1.3.2.1 FRONT-END APPLICATION .....	21
3.1.3.2.2 BACK-END APPLICATION .....	21
3.1.3.2.3 RATIONAL ROSE ENTERPRISE EDITION .....	21
3.1.4 PHASE 4: EVALUATION .....	21
3.1.5 PHASE 5: CONCLUSION .....	21
3.2 CHAPTER SUMMARY .....	21
<b>CHAPTER FOUR: SYSTEM ANALYSIS AND DESIGN .....</b>	<b>22</b>
4.0 INTRODUCTION .....	22
4.1 SYSTEM REQUIREMENTS .....	22
4.2 USER REQUIREMENTS .....	22
4.2.1 FUNCTIONAL AND NON-FUNCTIONAL REQUIREMENTS .....	22
4.3 HARDWARE REQUIREMENTS .....	24
4.4 SYSTEM DESIGN .....	25
4.4.1 USE CASE DIAGRAM .....	25
4.4.1.1 USE CASE SPECIFICATION .....	26
4.4.2 ACTIVITY DIAGRAM .....	32
4.4.2 SEQUENCE DIAGRAM .....	33
4.4.2 CLASS DIAGRAM .....	34
4.5 CHAPTER SUMMARY .....	34
<b>CHAPTER FIVE: PROTOTYPE DEVELOPMENT AND EVALUATION .....</b>	<b>35</b>
5.0 INTRODUCTION .....	35
5.1 PROTOTYPE DEVELOPMENT .....	35
5.1.1 USER INTERFACE DESIGN .....	35

5.2 PROTOTYPE TESTING PHASES.....	39
5.2.1 SYSTEM TESTING.....	39
5.2.2 CODE TESTING.....	39
5.2.3 UNIT TESTING.....	39
5.3 EVALUATION OF THE PROTOTYPE .....	40
5.3.1 EVALUATION TECHNIQUES AND RESULTS .....	40
5.4 FEATURES OF THE PROTOTYPE .....	42
5.5 CHAPTER SUMMARY .....	42
CHAPTER SIX: CONCLUSIONS AND RECOMMENDATIONS .....	43
6.0 INTRODUCTION .....	43
6.1 CONTRIBUTION OF THE STUDY .....	43
6.2 CONCLUSION AND LIMITATIONS .....	44
6.3 RECOMMENDATIONS AND FUTURE WORKS .....	44
6.4 CHAPTER SUMMARY .....	44
REFERENCES .....	45
APPENDIX A .....	58
APPENDIX B .....	59
APPENDIX C .....	61



## **LIST OF FIGURES**

<b>NO</b>	<b>NAME</b>	<b>PAGE</b>
FIGURE 3.1:	DESIGN RESEARCH IN INFORMATION SYSTEMS	17
FIGURE 3.2:	PROTOTYPING METHODOLOGY	20
FIGURE 4.1	USE CASE DIAGRAM	25
FIGURE 4.2:	LOGIN USE CASE SPECIFICATION	26
FIGURE 4.3:	REGISTRATION USE CASE SPECIFICATION	26
FIGURE: 4.4:	CREATE NEW USER USE CASE SPECIFICATION	27
FIGURE 4.5:	CHANGE PASSWORD USE CASE SPECIFICATION	28
FIGURE: 4.6:	MAKE FEES PAYMENT USE CASE SPECIFICATION	29
FIGURE 4.7:	VIEW STUDENT REPORT USE CASE SPECIFICATION	30
FIGURE 4.8:	LOGOUT USE CASE SPECIFICATION	31
FIGURE 4.9:	ACTIVITY DIAGRAM	32
FIGURE 4.9:	SEQUENCE DIAGRAM	33
FIGURE 4.9:	CLASS DIAGRAM	34
FIGURE 5.1:	WELCOME SCREEN	36
FIGURE 5.2:	LOGIN SCREEN	37
FIGURE 5.3:	REGISTRATION SCREEN	37
FIGURE 5.4:	CREATE USERS SCREEN	38
FIGURE 5.5:	ABOUT DEVELOPER SCREEN	38

## **LIST OF TABLES**

<b>NO</b>	<b>NAME</b>	<b>PAGE</b>
TABLE 4.1:	FUNCTIONAL REQUIREMENTS	23
TABLE 4.2:	NON-FUNCTIONAL REQUIREMENTS	24
TABLE 4.3:	MINIMUM HARD-WARE REQUIREMENT SPECIFICATIONS	24
TABLE 6.1:	DEMOGRAPHIC DATA RESULTS	41
TABLE 6.2:	RESPONDENTS DATA RESULTS	41
TABLE 6.3:	EVALUATION RESULTS	41

## **LIST OF ABBREVIATIONS**

ACSSMS	Adult Commercial Secondary School Management System
SIMS	Student Information Management System
SIS	Student Information System
SMS	Student Management System
ACSS	Adult Commercial Secondary School
SRS	Student Records System
CMS	Campus Management System
ERP	Enterprise Resource Planning
MIS	Management Information System
UML	Unified Modeling Language
ERMS	Electronic Record Management System

# **CHAPTER ONE: INTRODUCTION**

## **1.0 BACKGROUND OF THE STUDY:**

For the last two decades the themes of governance and management have continuously been on the top of education policy agendas in most countries in the world, and a great number of educational problems were attributed to bad management or inappropriate mechanisms of governance (Gábor, 2003; Duhaney, 2005; Jessica et al., 2009). Furthermore, information has become a critical resource to organizations and individuals and should be managed in a suitable way to ensure its cost effective use, and every aspect of management relies on information to succeed. So, to improve the performance of the organization, the management must be economical, efficient and effective (Baskerville, 2002; Johnson & Higgins, 2010).

Moreover, information systems is essential part of modern education, notably because of numerous possibilities and advantages which information technology brought forward like effectiveness and efficiency for education sectors, as well as for better achievement of setup education goals (Michael et al., 2006; Vuksanovic et al., 2007; Kate, 2010). Thus, nowadays the deployment of information systems in organizations has been highly interconnected with each other and the development and the use of an information management system (MIS) leads to better planning, better decision-making and better results (Nambisan, 2003; Arnott & Pervan, 2005).

In addition, managing diversity of tasks and complexity will certainly be one of the most difficult tasks in Schools. The administrative traditions of education, one of the oldest public services, often make the elaboration of adequate new answers particularly difficult (Tabata & Johnsrud,

2008). Also, IS-based educational management in the 21st century have contributed and provide a solution to the challenges and problems that schools are facing it at both system and school level, because the new solutions (Information Systems) are already being applied in many schools in the world (Knowles, 2001; Marc et al., 2007). Hence, it is an outstanding task of educational leaders and thinkers to understand the nature of the emerging new technologies which leads to good governance and management of school operations (Macy et al., 2001; Caldwell & Harris, 2008).

For this reason, Adult Commercial Secondary School should have just-in-time information system to overcome the difficulties of the paper-based manual systems, and the school operations should be managed by using information systems. One of the school systems that are widely accepted in the world, to manage student information is called School Management System which is the focal point and the main target of this study.

## **1.1 PROBLEM STATEMENT:**

Students are the main asset and the future of every school, and managing student information has become one of the main tasks for both the administration and the teachers (Appleton-Knapp & Krentler, 2006; Francine et al., 2009). Therefore, management of most educational schools are engaged and concerned of how they can easily and efficiently maintain student information, because insufficient and not on time information of the student can cause the institution to lose their image and/or reputation as well (Brown & Warschauer, 2006; Yonezawa et al., 2009). Furthermore, absence of computer application towards the management of student information can affect the overall academic performance of the school, and information systems were intended to support the management, and usually work at much higher level of complexity (Bennett et al., 2002; Gumport & Chun, 2005; Lemke et al., 2006).

In addition, manual deficiencies includes problems associated with out-dated, incomplete, hard to understood, inaccessible, less portable, and technically hard to maintain data and this coupled with inefficient and poor quality of management leads to poor performance (Ventura, 1988; Yongyi & Ying, 2005). So, it is very important for educational sectors to have ready-to-use and just-in-time solutions that simplify and increase the speed of data collection and the management of the student information, because the implementation of such school information systems would provide an integrated solution for schools and satisfy the potentials and overcome the problems that exist (Pegler, 1993; Sahlberg, 2007; Junco & Junco & Cole-Avent, 2008).

However, currently there is no information system that has been adopted in Adult Commercial Secondary School (ACSS) to manage student information. In another words, the existing problem is lack of computerized school management system. However, lack of requirement model to develop the school system is also another problem, which is very important for a developer to develop the school system. Because without requirement model a developer will not be able to construct the school system and if a system was developed without a good understanding of the user requirement, this will lead to the production of poor school management system and will cause lack of customer satisfaction. Therefore, to make student information management in the school effective and more efficient, an integration of a requirement model with a computerized school management system or a prototype is required.

## **1.2 RESEARCH QUESTIONS:**

Based on the problem statement been mentioned above, the following research questions were listed. However, some of the questions mentioned here are related to the system development aspects.

- 1) What are the current limitations of the existing school management system?

- 2) What are the user requirements for developing an effective school management system for Adult Commercial Secondary School?
- 3) What are the systems requirements of the new proposed school management system?

### **1.3 OBJECTIVE OF THE STUDY:**

The main objective of this study is to design a requirement model for Adult Commercial Secondary School in Somalia, and this can be achieved through the following sub-objectives which are as follows:

- A. To identify the user requirement of Adult Commercial Secondary School in Somalia.
- B. To analyze the user requirements and design the requirement model for Adult Commercial Secondary School Management System (ACSSMS).
- C. To develop the proposed school management system prototype based on the requirement model.
- D. To evaluate the prototype been released to know customer satisfaction.

Thus, after the requirement model is completed, a small prototype which will cover some of the functional requirement that has been discovered in the research will also be developed as mentioned above to enable the school manager their student information easily and more effectively.

### **1.4 SCOPE OF THE STUDY:**

This study was intended to design a requirement model of School Management System for Adult Commercial Secondary School, in order to provide a model of the proposed system, and to guide the developers to construct the proposed school management system. So, this

project is a desktop application which allows Adult School Registrar to do the registrations of new students and school fee payment more easily. The requirement model consists of user requirement, system requirement, use case diagram, use case specification, activity diagram, sequence diagram, collaboration diagram, class diagram and supporting textual information to simplify the development for developers to construct the proposed system. Also, a small prototype which will focus on the registration process will be then developed to provide some functionality for the school and to enable them manage their student information easily and more efficiently. For further details about the proposed system you can check the system request letter, which is attached in this document in appendix c.

### **1.5 SIGNIFICANCE OF THE STUDY:**

This project will provide a specific guideline to design a school management system that can do registration and payment. Also, a prototype which is able to register new student and update old student information, create user accounts for the staff members as well as change their passwords if needed more easily will be then developed which will cover some of the main functional requirements. This study helps any other organizations which are related to education to increase the quality of system development.

### **1.6 EXPECTED DELIVERABLES:**

The expected output of this study is a design of a requirement model, and a small prototype which some of the main functional requirements been discussed in chapter four.

### **1.7 REPORT STRUCTURE:**

This study was presented in six chapters, an overview of the report structure are as follows:



**Chapter One: Introduction** discusses the background of the study and the problem statement, the objectives, scope and significance and the expected output of the study.

**Chapter Two: Literature Review** continues to review the related literature, also some relevant projects and theories which are related to the study was presented in this chapter.

**Chapter Three: Research Methodology** describes the methodologies been adopted in this study. Design Research in Information Systems methodology is used to conduct this research.

**Chapter Four: System Analysis and Design** presents the proposed system design, user requirements of the school and the diagrams of the proposed model.

**Chapter Five: Prototype Development and Evaluation** presents prototype development phases and evaluation techniques.

**Chapter Six: Conclusions and Recommendations** reviews back the study objectives, also recommendations, future work and limitations of the study were discussed in this chapter.

## **1.8 CHAPTER SUMMARY:**

This chapter gives background of the study, also the objectives of this study was discussed. As well as the significance, the scope of the study was presented. In addition to that the expected output of the study has also been mentioned. Finally, a summarized description and the general report organization of the remaining chapters were also stated.

## **CHAPTER TWO: LITERATURE REVIEW**

### **2.0 INTRODUCTION:**

The complexity and challenges of today's organizational settings has put great pressure on institutions to invent more effective managerial approaches and systems. Indeed, focus on management approaches and systems should be complemented by bringing and fostering expertise in design science to help design solutions to the problems (Gábor, 2003; Mohrman, 2007). Moreover, as Simon argues, organizations are our own creation and managers cannot stand outside as dispassionate observers trying to understand and explain them as scientific realities and pursue a research program aimed at finding truth (Simon, 1996; Raymond & Bergeron, 2008).

Therefore, organizations should be perceived as human designs and artifacts which designed to achieve the goals and purposes of human beings and this requires attention to management systems as useful designs and development of a design science to provide content and methodological knowledge to guide the design process (Mohrman, 2007; Ardakan & Kaveh, 2009). However, designing useful artifacts is complex due to the need for creative advances in domain areas in which existing theory is often insufficient (White & Fortune, 2002; Hevner et al., 2004).

### **2.1 REQUIREMENTS:**

In order to develop a new system, the system analyst must be concerned about the users' requirements and should find out from the users what they require in the new proposed system (Castro et al., 2002). Leithbridge and Laganieri (2001) described a requirement as a statement about the feature of descriptions of all stakeholders and must be valid to resolve the customers'

problem. Thus, a requirement is a statement which means that each requirement is relatively short and concise piece of information, expressed in fact and it can be written as a sentence or can be expressed using some kind of diagram. Moreover, Lethbridge and Laganier (2001) in their book also stated that a requirement says something about the task the system is supposed to accomplish but did not describe the domain or how the system will be implemented.

However, according to Sommerville (2001) and Whitten et al. (2001) requirements can be divided into two major types which are the functional requirement and non-functional requirement. Whitten et al. (2001) defined functional requirement as a description of activities that a system must provide while Sommerville (2001) stated that the functional requirement is system services which are expected by the users of the system. Also, the functional requirement will present the functions that must be included in certain system to satisfy the business need and be acceptable to the users (Martin, 2002).

Bennet et al. (2002) stated that non-functional requirements are those that describe aspects of the system that are concerned with how well it provides the functional requirement. While Whitten et al. (2001) said that non-functional requirement is a description of other features, characteristics and constraints that define a satisfactory system. The examples of non-functional requirements are performance (throughput, response time), ease of learning and use and also security consideration. The requirements that fulfill the users' needs are very essential to the success of a software development project and without requirement the system developed will tend to fail and exceed the budget (Bennet et al., 2002).

## **2.2 REQUIREMENT MODEL:**

According to Whitten et al. (2001) system modeling techniques such as process, data, and object modeling are excellent tools for the system analyst to use for analyzing requirement in

order to eliminate mistakes. However, a model is a representation of reality as a picture of thousand words. Also, model helps people to understand system and visualizes them. Therefore, the most effective way to understand a complex system is to develop a model of that system. Thus, requirement model is a powerful way to capture requirement and effective in conveying meaning (Kulak & Eamonn, 2004).

Also, a good requirement model will help to produce a system that truly matches the user's needs and help to produce a system that can be highly beneficial to the users (Hoffer et al., 2002; George et al., 2004). Hence, a requirement model is a description of what a system is supposed to do and it will give a complete view of the requirements for that system by using one or more types of diagram to cover all the aspects of the requirements (Bennet et al., 2002).

Briefly, the diagram used to model out the requirement is known as Requirement Model. However, on a bigger scope reference models are used to represent the IS requirements. Reference model extends its scope to include the full system analysis and design cycle which spans through implementation. Requirement model is the subset to the reference model (Sawyer & Reich, 1999; Christopher, 2010). So, the good model of the requirement will help to make system, which really corresponds to requirements of the user and the help to make system which can be very favorable to users. The requirement model is the description of that system as it is supposed to do and mainly it focused on modeling the information captured through the requirement analysis phase (Marakas, 2004). Following are some examples of existing requirement models.

### **2.2.1 REQUIREMENT MODEL FOR THE MANAGEMENT OF ELECTRONIC RECORDS:**

Model requirement for the management of electronic records was developed by Corwell Affiliated for the European Commission's Interchange of data Administrator (IDA) initiatives

(Fresco & Wauldron, 2001; Ahlemann, 2009). It focuses mainly on the functional requirements for the management of electronic records by an Electronic Record Management System (ERMS). This requirement model specification is suitable and applicable to any organization that wishes to practice ERMS in their organizations. Also it gives guidelines on the requirements for managing electronic record. It covers on classifications schemes, control and security, retention and disposal, records, capture reference, search, retrieval rendering and administrative functions in separate departments and it also covers on the non-functional requirements such as ease of use, scalability and technical standards (Fresco & Waldron, 2001). Therefore, this model can be a good reference for records managers who appreciate what ERMS ought to do.

However, as asserted by Khatri & Rine (2001), reference model provides an important link between organizational activities and technological actions of reusing known knowledge in software engineering process. An ideal software architectural design should yield a software blueprint that optimizing the often conflicting the functional and nonfunctional requirements of real world problems (Liao et al., 2007). Moreover, reference model is complex in nature and difficult to create (Ahlemann, 2009)

Therefore, a requirement model is the best suited to this study as it provides significant benefits as much as the reference model. But it also allows less complex formation and easy creation of a new model without diminishing the benefit of the reference model.

## **2.3 MANAGEMENT INFORMATION SYSTEMS:**

The term information systems has been defined to denote any of a wide combination of computer hardware, communication technology and software designed to handle information related to one or more business processes and it serves to coordinate the work of many different organizational functions from a back office administration support to a company's strategic

management tool. For example, the payroll, sales orders, inventory control and personnel records systems are some examples of back office administration support systems. Additionally, for industries such as banking travel and insurance IS is part of the operating core of the organization (Flowers, 1996; Wei et al., 2008; Hu & Webb, 2009; Laudon & Laudon, 2010).

However, implementation of an information system involves the design, delivery and use of the software system in the organization and the subject of IS studies is interdisciplinary, integrating technological disciplines with management and other disciplines such as psychology and sociology. Also, an information system is user-interfaced and designed to provide information and information processing capability to support the strategy, operations, management analysis, and decision-making functions in an organization and such system uses information technology (IT), manual procedures, models, and knowledge bases and databases. Applications may improve operational efficiency, improve and innovate functions or restructure business processes. Thus, an information system stores, processes and delivers information relevant to an organization, in such a way that the information is useful to those who wish to use it, including managers, staff, customers, and suppliers. An information system may or may not involve the use of computer systems (Yeo, 2002; Avison & Fitzgerald, 2008).

### **2.3.1 BASIS FOR THE EXISTENCE OF INFORMATION SYSTEMS:**

Information has a meaning and use to a particular recipient in a particular context. It comes from selecting, summarizing, and presenting data in such a way that it is useful to the recipient. Also information is defined as structured data that has a contextual meaning. It provides the user with the knowledge to make the necessary decisions (Avison & Fitzgerald, 2008; Bernd, 2008). Thus, Information systems are supposed to inform people (who in the IT context are called users or clients) and this is the primary objective of the existence for information systems, and from the systems thinking view IS exist to serve, help or support

people taking action in the real world, and the action of the real world could mean anything from increasing the efficiency of the workforce to consolidating the resources under the power and control of one person (Bell & Wood-Harper, 1998; Checkland & Scholes, 1990; Damsgaard & Scheepers, 2000; Yeo, 2002; Dodangeh et al., 2009).

### **2.3.2 MANAGEMENT INFORMATION SYSTEMS IN SCHOOLS:**

Technology plays a major role in the delivery of educational services in today's colleges and universities. The enrollment in for-credit distance education courses had more than doubled between 1997 and 2000, and distance education is undergoing rapid growth and expansion as colleges and universities rush to offer online courses and degrees in a variety of subject areas (Gumport & Chun, 2005). In addition, students are often expecting college instructors to incorporate some form of technology into the class design even in traditional non-distance education courses, although many educators feel that advances in technology will positively change the way classes are taught (Schrodt & Turman, 2005). Moreover, technological improvements do not always measure up to initial expectations. Regardless of any negative side effects, such as cost or training for faculty, technology continues to advance in society and specifically in the college classroom (Gumport & Chun, 2005; Booch et al., 2007).

However, the development of IT technological tools has made great impact on the educational sector in Turkey and principals have been using MIS to improve the efficiency of the administrative and academic services been rendered in the schools, and the author explored principal's perceptions about management information systems and how school management information systems are used in primary schools (Demir, 2006). Also, IS does not only supports the processing of information but the innovations, because the systems can adapt to changes in the systems and it becomes helpful to cope with the demands for change (Bellum, 2003; Demir, 2006). Furthermore, the IS assist the school to comprehend and define inner and outer

information transfer in order to meet the expectation of the teachers, students, the school management and other stakeholder in the education sector. Also, it assists the prompt organization of school activities and programs (Bellum, 2003; Demir, 2006).

In addition, computerized information systems are pervasive in all forms of business organizations and recent studies show that many of these projects have failed in the combination of budget and/or schedule overruns and/or for not meeting user's requirements (Yeo, 2002; King & Lyytinen, 2006). Thus, the effectiveness and the completeness of any IS depends on a deep understanding of the user requirement of the organization, because efficiency is assumed a foundation for all (Liao et al., 2007; Sidorova et al., 2008).

## **2.4 SCHOOL MANAGEMENT SYSTEM:**

This system also known as student information management system (SIMS), student records system (SRS), student management system (SMS), and campus management system (CMS) or school management system (SMS). In addition, the SIS is equivalent to an Enterprise Resource Planning or ERP system for a corporate customer. As such, many of the issues with ERP System Selection Methodology, implementation, and operation of an ERP system apply to schools and their SIS systems (Zach, 2007). However, school management system or SMS incurs such application software designed for educational establishments to manage student data and it provides capabilities for entering student test and other assessment scores, building student schedules, tracking student attendance as well as managing many other student-related data needs within the institution university (Valerie, 2004; Penny & David, 2004). Thus, many of these systems applied in the schools can be scaled to different levels of activity and can be configured by their home institutions to meet local needs and it can help reduce in appropriate referrals to special education, help teachers write goals, and track how well students are doing in inclusive environments (Richard & Walter, 2005; Ewald, 2006; Cleland & Ireland, 2007)



## **2.5 ADULT LEARNING DOMAIN:**

Adult learning is frequently spoken of by adult educators as if it were a discretely separate domain, having little connection to learning in childhood or adolescence. Following the outbreak of the Somali Civil War in 1991, the task of running schools in Somalia was initially taken up by community education committees established in 94% of the local schools (Noel, 2005). Then, numerous problems had arisen with regard to access to education in rural areas and along gender lines, quality of educational provisions, responsiveness of school curricula, educational standards and controls, management and planning capacity, and financing.

So to address these concerns, the intellectual people established schools and most of these schools follow the national educational policy for primary, intermediate and secondary schools (Peter, 2006). However, Adult Commercial Secondary School was established on November 2006; by a group of academicians in Hodan distract Mogadishu-Somalia. Currently, the school provides business and accounting subjects as well as the introductory of science subjects and computer fundamentals. At the moment, the school was recognized nationally for graduating business students who distinguish themselves as inspired and responsible leaders in their work organizations and in their communities.

## **2.6 UNIFIED MODELING LANGUAGE:**

Is a modeling to that is used to build models quickly and easily, and it is often used in the simulation for the purpose of revealing in-depth information about a system, and one of the advantages of models generally is that they are expandable while investigating the cause or root of a scientific problem, also it has four important features which are icons, two-dimensional symbols, path and string (Liu, 2001; Quatrani, 2002; Robertson, 2006; Loton, 2010). Also, the good thing about the elements of UML is that they are simple to understand. Hence, it is easy to

see the objects and the major functionality of the objects in each and every use case scenario (Larman, 2005; James et al, 2006; Refsdal & Stølen, 2008).

### **2.6.1 USE CASE DIAGRAM:**

Use case easily depicts the functionality of an application in the use case diagram. The diagrammatical feature of use case makes it useful in determining the user requirement easily. The use case assist in showing actors that will actually communicate with the system (Ali et al, 2007; Chechik & Wirsing, 2009; Giannakopoulou & Orejas, 2011).

### **2.6.2 USE CASE SPECIFICATION:**

A use case specification is a description of steps or actions between a user or actor and a software system which lead the user towards something useful (Bittner & Spence, 2003; Martin, 2003). Use case specifications are a software modeling technique that helps developers determine which features to implement and how to gracefully resolve errors (Adolph et al., 2002; Bennet et al., 2002).

### **2.6.3 CLASS DIAGRAM:**

The class diagram gives details of the data that is crucial to the functionality of the system. You are only required to design a class if you want to keep the information (Schmuller, 2002).

## **2.7 CHAPTER SUMMARY:**

This chapter discusses requirement model, management information system in schools and some of the UML tools which was used to visualize the main functions of the requirement model. Also, it discusses some literatures that have contributed in designing a suitable requirement model of the proposed school management system.

## **CHAPTER THREE: RESEARCH METHODOLOGY**

### **3.0 INTRODUCTION:**

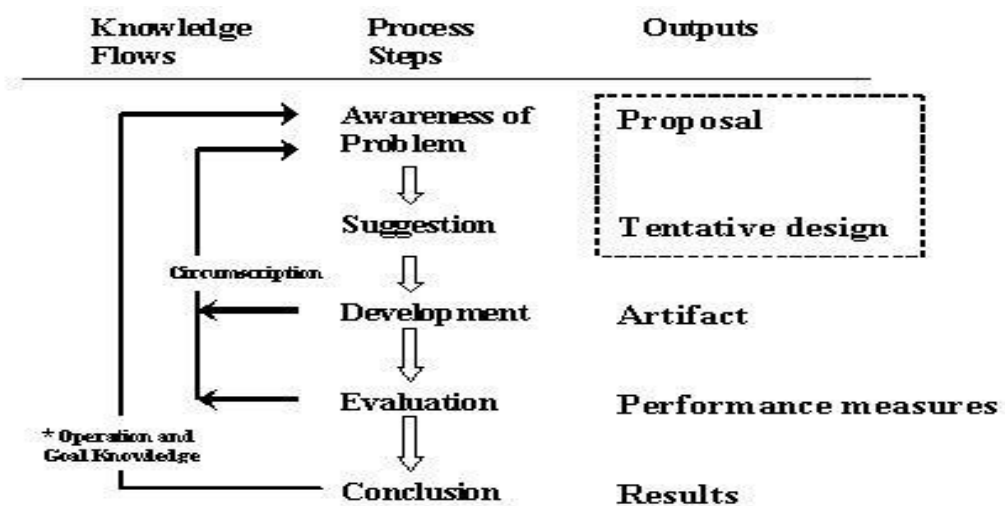
Generally, methodologies promote communication between project participant by defining essential percipient and interaction and giving a structure to the whole process. Each methodology has procedures, technique, tools and documentation aids that are intended to help the system developer to develop and information system (Vaishnavi & Kuechler, 2004). However, methodology was defined as a set of general principles that guide a practitioner or manager to the choice of the particular method suited to a specific task or project, and a methodology should guide the researchers follow the steps to ensure the project finish in time and meets the user's requirement (Bennett et al., 2002).

Accordingly, Design research in Information System methodology build by Vaishnavi & Kuechler (2004) was carefully adopted throughout this study. Design research is yet another "lens" or set of analytical techniques and perspectives (complementing the Positivist and Interpretive perspectives) for performing research in IS. Khosrowpour (2006) has been used design research approach and many other researchers' like Cater-Steel & Al-hakim (2009). In addition, Ardakan & Mohajeri (2009) have been followed by the design research.

### **3.1 DESIGN RESEARCH IN INFORMATION SYSTEMS METHODOLOGY:**

This methodology was used in this research and it is accepted among many researchers. For example, Weerd (2005) stated that the design research methodology for performing research in information systems used for Web Manager Implementations. Design research involves the analysis of the use and performance of designed artifacts to understand, explain and very frequently to improve on the behavior of aspects of Information Systems. Such artifacts include -

but certainly are not limited to - algorithms (e.g. for information retrieval), human/computer interfaces and system design methodologies or languages (Orlikowski & Iacono, 2001; Vaishnavi & Kuechler, 2004). Additionally, according to Vaishnavi and Kuechler 2004, this method was used by researchers in many disciplines and fields, notably Engineering and Computer Science, using a variety of approaches, methods and techniques. However, Design research in Information System aims to build and evaluate IT artifacts to meet business needs and it includes five major steps as shown in this figure below.



**FIGURE 3.1: DESIGN RESEARCH IN INFORMATION SYSTEMS**

### 3.1.1 PHASE 1: AWARENESS OF PROBLEM:

An awareness of an interesting problem may come from multiple sources. However, the output of this phase is a Proposal whether formal or informal for a new research effort (Vaishnavi & Kuechler, 2004). So, an interview with the school administrator and staff members was carried out to apprehend the viewpoint of the current management in Adult School in Somalia. The interview focused to understand what the current business operation is, and the viewpoint of the new proposed. Besides, previous studies ensure that the proposed system could gain competitive advantage of the school.

#### **3.1.1.1 DATA COLLECTION:**

Data collection is essential in producing a requirement model that actually fulfills the school needs. Normally, interview and/or questionnaire methods can be most effective to collect data. However, Interviews can be conducted by seeking information face to face or by means of telephone, and the analysis of the information is the concluding part of any evaluation. The analysis of data should be summarized and then presented (Mahmoud, 2010). Also, Okazaki, (2005) discussed the importance of telephone survey as useful to cover largely distributed sample with long distance, the technique is expensive has a high response rate.

#### **3.1.1.2 PRIMARY DATA:**

The primary data of this study was gathered by an interview thorough the phone with the school staff and administrator and the researcher focused to find out what exactly the school needs and the problems associated with the current system. In addition, the interview focused to identify the user requirement which is presented in chapter four.

#### **3.1.1.3 INTERVIEWING:**

Interviewing is a method of collecting data in order to obtain information on the issues of interest. In this research, interviews were conducted on the school principle and registrar. The interviews were conducted via telephone. The main advantage of telephone interviews is that the persons can be reached easily in a relatively short period of time without having to make an appointment (Sekaran, 2003). So, during the interview the school administrator suggested that the proposed system should focus more on to the school registration process, and he added that currently the whole school system is paper-based and manually managed by the school staff. However, now the school is facing big challenges regarding the management of the registration of new students and fee payment processes. Refer to appendix (A) for interview questions, and appendix (C) for system request letter.

### **3.1.2 PHASE 2: SUGGESTION:**

The tentative design is implemented in this phase, and the suggestion phase follows immediately after the proposal, however a tentative design is likely the performance of a prototype based on that design would be an integral part of the Proposal (Vaishnavi & Kuechler, 2004). So, the UML and other tools were used to design the requirement model of the school system.

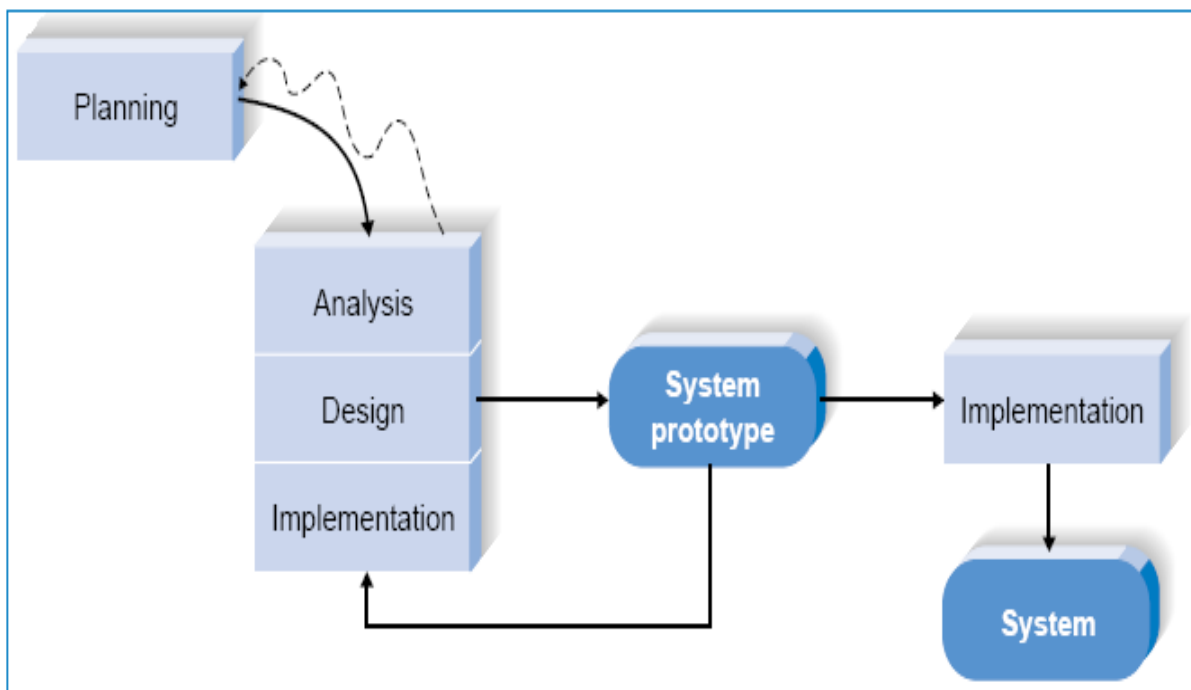
### **3.1.3 PHASE 3: DEVELOPMENT:**

According to Vaishnavi & Kuechler, (2004) the techniques for implementation will of course vary depending on the artifact to be constructed. An algorithm may require construction of a formal proof. An expert system embodying novel assumptions about human cognition in an area of interest will require software development, probably using a high-level package or tool. However, during this phase the *Prototyping*-based methodologies has been used and all requirements were identified and then translated into a more detailed design. Also, the implementation of the proposed school system was been done in this phase and the UML tools were used to design all use case diagrams, then the development of the prototype was constructed using Microsoft Visual Basic 6.0 and Microsoft Access 2007 database. So below is a brief introduction to the *Prototyping*-based methodology for software development which has been used in the prototype development phase of this study.

#### **3.1.3.1 PROTOTYPING METHODOLOGY:**

The prototyping-based methodologies perform the analysis, design, and implementation phases concurrently, and all three phases are performed repeatedly in a cycle until the system is completed (Dennis & Wixom, 2000). With this methodology, a basic analysis and design are performed, and work immediately begins on a system prototype, a “quick-and-dirty” program that provides a minimal amount of features (Darwiesh, 2008). The first prototype is usually the

first part of the system that the user will use. This is shown to the users and the project sponsor, who provide reaction and comments. This feedback is used to re-analyze, re-design, and re-implement a second prototype that provides a few more features (Dennis & Wixom, 2000).



### **3.1.3.2 DEVELOPMENT TOOLS:**

In this section, the tools which were used to design the proposed system and develop the prototype were stated briefly.

#### **3.1.3.2.1 FRONT-END APPLICATION:**

- Microsoft Visual Basic 6.0 is used to design and code the user interface design.

#### **3.1.3.2.2 BACK-END APPLICATION:**

- Microsoft Access 2007 Database is used as a store of the data of the prototype.

#### **3.1.3.2.3 RATIONAL ROSE ENTERPRISE EDITION (RREE):**

RREE is a UML tool which was used to design the different use case diagrams and use case specification, also the activity diagram was used to visualize the requirement model of this study.

### **3.1.4 PHASE 4: EVALUATION:**

Once the new prototype is constructed, an evaluation according to the customer satisfaction was done and the evaluation results were presented in chapter five of this report. The evaluation has been made by the users (school registrar and administrator) and they were given questionnaire. Moreover, in this phase prototype testing will took place and the researcher has tested the prototype.

### **3.1.5 PHASE 5: CONCLUSION:**

This phase is the finale of a specific research effort. Typically, it is the result of satisfying the users Registration Department of Adult School.

## **3.2 CHAPTER SUMMARY:**

This chapter discussed the Design Research in Information System and Prototyping methodologies which was carefully selected for this study.



## **CHAPTER FOUR: SYSTEM ANALYSIS AND DESIGN**

### **4.0 INTRODUCTION:**

This chapter presents the proposed system's system requirement, user requirement, also presents systems use cases, use case specifications and some other diagrams.

### **4.1 SYSTEM REQUIREMENTS:**

Stakeholders, analysts, and designers often fail to differentiate the roles of user and system requirements. Unfortunately, treating them as the same thing can create problems for projects. The system requirement expresses a desirable system property that, when implemented in the domain or business process, will lead (we hope) to the achievement of at least one user requirement (Neil, 2008).

### **4.2 USER REQUIREMENTS:**

Following are the main user requirements been discussed during the interview with Adult school administrator and staff members:

- ✓ The school administrator must be able to create new user account for the staff members.
- ✓ The school administrator only should be able to change user accounts passwords.
- ✓ The system should be able to register new students, update, delete and view the student information more easily.
- ✓ Make school fee payment more effectively.
- ✓ Show the students information report based on year level and/or classes.

#### **4.2.1 FUNCTIONAL AND NON-FUNCTIONAL REQUIREMENTS:**

The functional and non-functional requirements were presented here and are classified into these three main parts according to their priorities:

- M – Mandatory Requirements (Something the system must do)
- D – Desirable Requirements (Something the system preferably should do)
- O – Optional Requirements (Something the system may do)

**TABLE 4.1: FUNCTIONAL REQUIREMENTS**

REQ_ID	DESCRIPTION	PRIORITY
<b>ACSSMS_01</b>	<b>Login</b>	
ACSSMS_01_01	The administrator and the registrar must provide authentication means before using the application	M
<b>ACSSMS_02</b>	<b>Registration</b>	
ACSSMS_02_01	Register New Students	M
ACSSMS_02_02	Edit / Correct and Update Students Related Data	D
ACSSMS_02_03	Delete Student Related Information	O
<b>ACSSMS_03</b>	<b>Create New User</b>	
ACSSMS_03_01	The administrator should be able to create new user accounts for the staff members	D
<b>ACSSMS_04</b>	<b>Change Password</b>	
ACSSMS_04_01	The administrator should be able to change any user passwords	D
<b>ACSSMS_05</b>	<b>Make Fees Payment</b>	
ACSSMS_05_01	The system should update student fees payment	M
<b>ACSSMS_06</b>	<b>View Student Report</b>	
ACSSMS_06_01	The manager and the registrar should be able to view student fees payment report	M

ACSSMS_06_02	The system should be able to show the student report by year and/or by their classes	D
<b>ACSSMS_07</b>	<b>Logout</b>	
ACSSMS_07_01	The administrator and the registrar should logout to exit the application	M

**TABLE 4.2: NON-FUNCTIONAL REQUIREMENT**

No.	Requirement ID	Requirement Description	Priority
	<b>ACSSMS_01</b>	<b>Reliability issues</b>	
1.	ACSSMS_01_01	The system must do what it is required to do without failing.	M
	<b>ACSSMS_02</b>	<b>Usability issues</b>	
2.	ACSSMS_02_01	Users can learn it fast and get their job done easily	M
	<b>ACSSMS_03</b>	<b>Security issues</b>	
3.	ACSSMS_03_01	The ability to prevent un authorized users to access data.	M
	<b>ACSSMS_04</b>	<b>Maintainability issues</b>	
5.	ACSSMS_04_01	The system will be able to be maintained later if needed.	M

### 4.3 HARDWARE REQUIREMENT:

**TABLE 4.3: MINIMUM HARD-WARE REQUIREMENT SPECIFICATIONS**

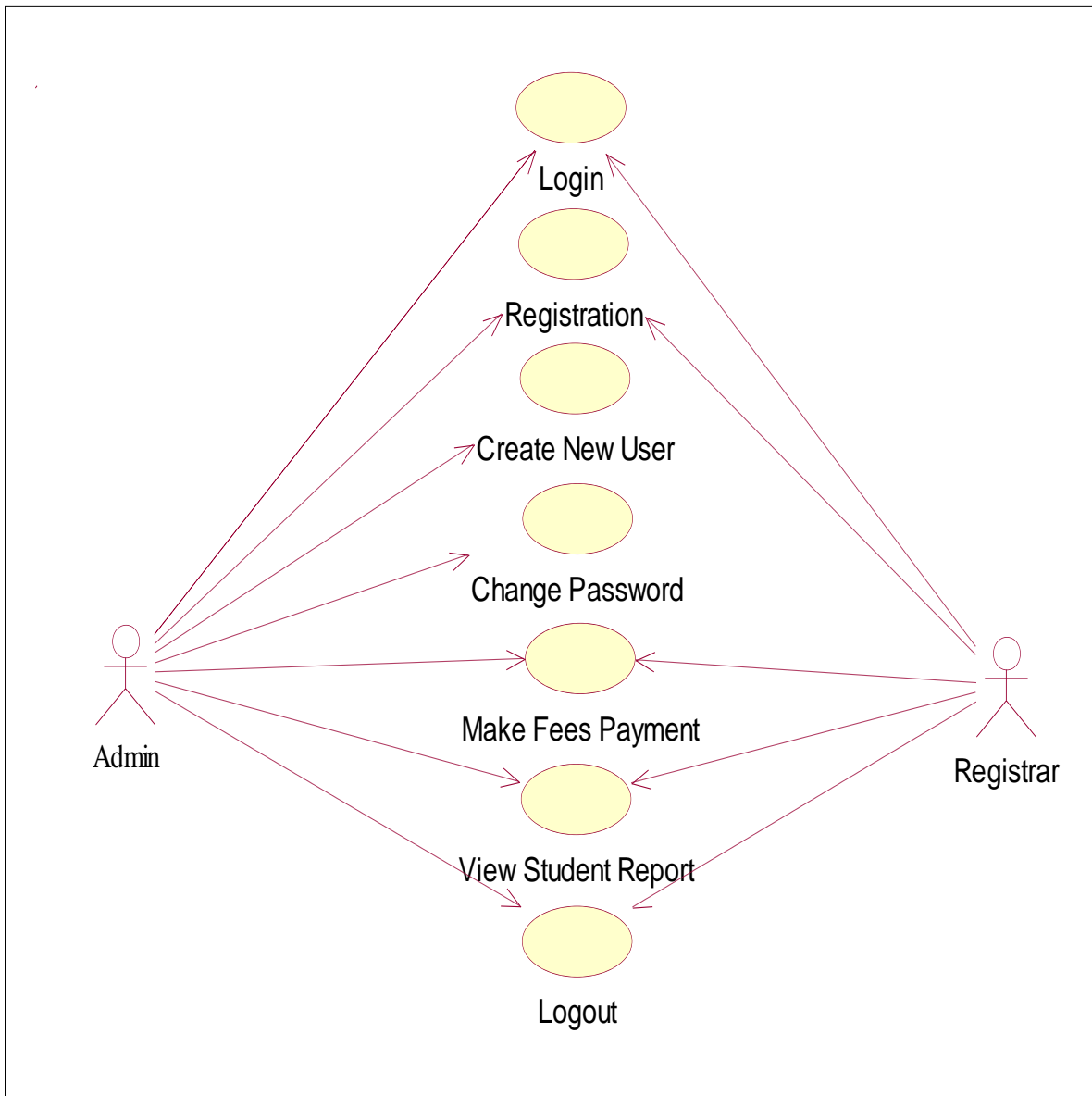
Computer				
Type	Processor	RAM	Hard Disk Capacity	QTY
Pentium 4	Intel 3.0 GHZ	1 GB	80 GB	1

## 4.4 SYSTEM DESIGN:

This design presents the model of the system and the developer to makes use of the UML tool to design the proposed requirement model of the school. Here are the different use cases and diagrams of the proposed system:

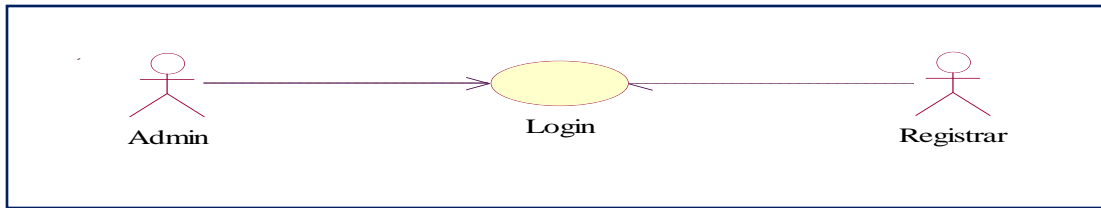
### 4.4.1 USE CASE DIAGRAM:

The use case diagram of the proposed system is shown below:



**FIGURE 4.1 USE CASE DIAGRAM**

#### 4.4.1.1 USE CASE SPECIFICATION:



**FIGURE 4.2: LOGIN USE CASE SPECIFICATION**

##### **Brief Description:**

This use case is initiated by the admin or the registrar in order to use the system. This process ends after the correct username and password has been entered by the users.

##### **Preconditions:**

Not applicable.

##### **Flow of events:**

###### **Basic follow:**

- System checks the user input with the database to see whether it is valid.
- If the user put the valid information. The system will show the main page.
- Otherwise, the system will show error message (**E1: Invalid Input**)

###### **Alternative follow:**

- Not applicable

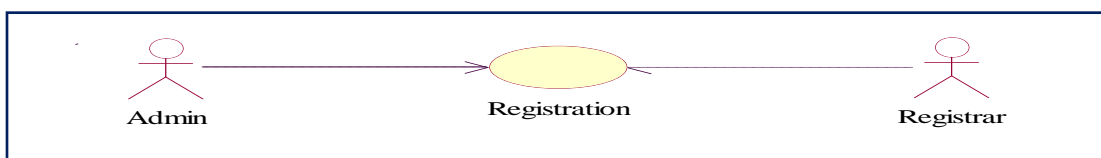
###### **Exceptional follow:**

###### **E-1: Invalid input:**

- If the user entered the wrong name or password, an error message will automatically appear 'Invalid Username and/or Password'

##### **POST-CONDITIONS**

- Not applicable.



**FIGURE 4.3: REGISTRATION USE CASE SPECIFICATION**

**Brief Description:**

This use case is initiated by the administrator or the registrar in order to register students.

**Preconditions:**

Not applicable.

**Flow of events:****Basic follow:**

- The system will present registration form, and the user should field all text fields.
- The system should save all information to the database after the user click save button.
- The system should also allow the register to update and delete necessary data.
- If the user put the invalid information. The system should give alert message  
**(E2: Empty Field Not allowed)**

**Alternative follow:**

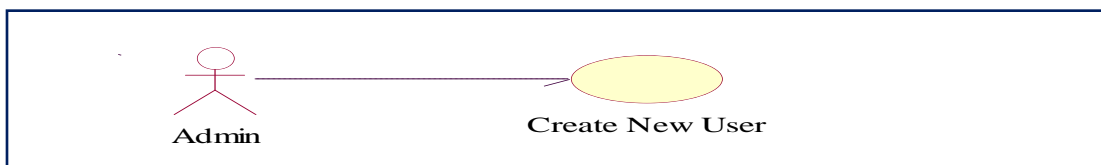
- Not applicable

**Exceptional follow:****E-1: Empty Field not allowed:**

If the user leaves blank fields the alert will appear 'Empty Field Not allowed'

**POST-CONDITIONS**

- The registrar and the admin mange the student's Information.



**FIGURE: 4.4 CREATE NEW USER USE CASE SPECIFICATION**

**Brief Description:**

This use case is initiated by the administrator to create new users to the system. The new user should be able to use the system after the manager logout the system.

**Preconditions:**

The admin can only create new user accounts.

**Flow of events:**

**Basic follow:**

- The system will present create user accounts form, and the admin should field all fields.
- The system should save all information to the database after the user click create button.
- The system should also check if the user exists in the database or not.
- If the user exists in the database. The system should give error message (**E3: User Exists in the database...Change Username**).

**Alternative follow:**

- Not applicable

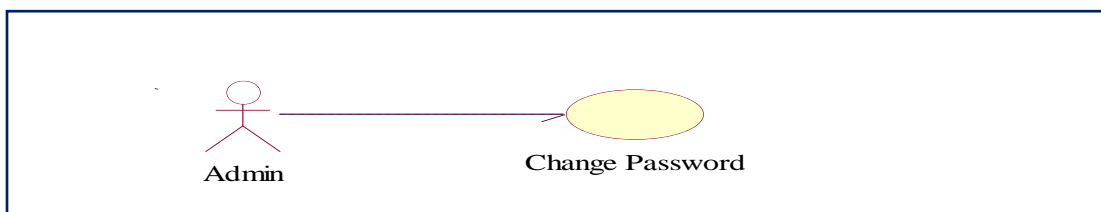
**Exceptional follow:**

**E-3: User Exists in the database...Change Username:**

If the user exists in the database, then the system should give error message 'User Exists in the database...Change Username'

**POST-CONDITIONS**

- The admin mange user creation form



**FIGURE 4.5: CHANGE PASSWORD USE CASE SPECIFICATION**

**Brief Description:**

This use case is initiated by the administrator to change password of the selected user and the system should activate it at the next login.

**Preconditions:**

The admin can only change user passwords.

**Flow of events:**

**Basic follow:**

- The system will present change password form, and the admin should be able to see old password.
- The system should update new password to the database after the user click change password button.

**Alternative follow:**

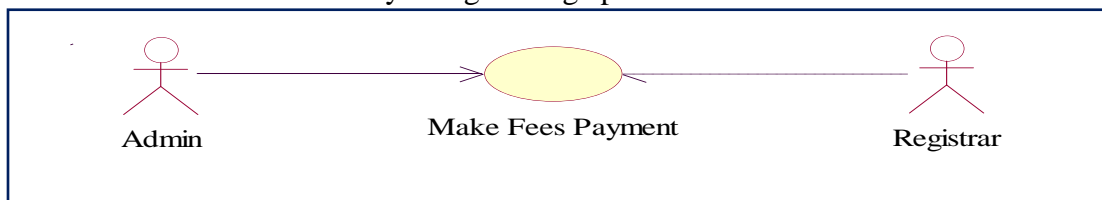
- Not applicable

**Exceptional follow:**

- Not applicable

**POST-CONDITIONS**

- The admin can only manage change password form



**FIGURE: 4.6 MAKE FEES PAYMENT USE CASE SPECIFICATION**

**Brief Description:**

This use case is initiated by the administrator or the registrar to update school fees payment. The system will generate report after the record is stored based on student who pay.

**Preconditions:**

The registrar and the admin can make fees payment.

**Flow of events:**



**Basic follow:**

- The system will present make fees payment form, and the user will fill all fields.
- The system should update student fees payment in the database after the user click update payment button.
- The system should print report based on the students who pay.

**Alternative follow:**

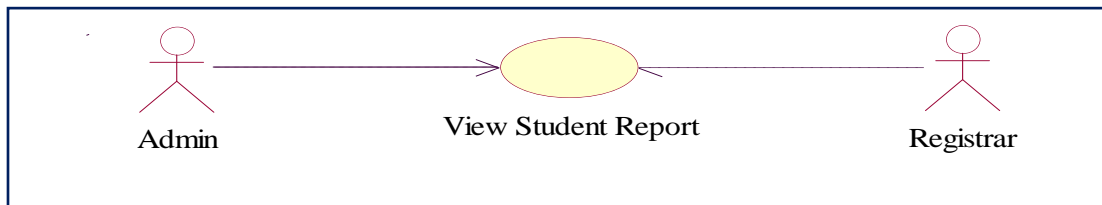
- Not applicable

**Exceptional follow:**

- Not applicable

**POST-CONDITIONS**

- The admin can only manage fees payment form



**FIGURE 4.7: VIEW STUDENT REPORT USE CASE SPECIFICATION**

**Brief Description:**

This use case is initiated by the administrator or the registrar to see the student report. The system will show reports based on school year and or student level. Also, the system should be able to show students who pay and those who didn't pay fees. Also, the system should be able to show a report of one student if necessary.

**Preconditions:**

The registrar and the admin can view student reports.

**Flow of events:****Basic follow:**

- The system will show view report main form and the user will have options to choose which report.

- The system should be able to show student fees payment report and all student report based on their classes and or academic year..
- The system should print report based on the options given by the users.

**Alternative follow:**

- Not applicable

**Exceptional follow:**

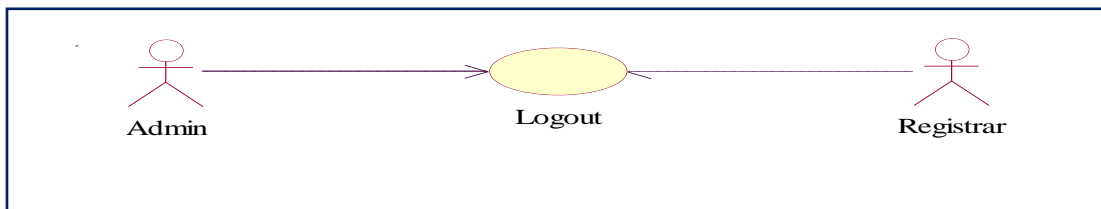
- Not applicable

**POST-CONDITIONS**

- The admin and the registrar can only view school reports.

**CONSTRAINT(S)**

Not applicable.



**FIGURE 4.8: LOGOUT USE CASE SPECIFICATION**

**Brief Description:**

This use case is initiated by the administrator or the registrar to exit the system. The system will show the login form to allow the user to login again.

**Preconditions:**

Not applicable.

**Flow of events:**

**Basic follow:**

- The system will show logout form to allow the user exit the application.
- The system shows confirmation message to confirm the user needs to exit.
- The system should show the login form and close all other forms.

**Alternative follow:**

- Not applicable

**Exceptional follow:**

- Not applicable

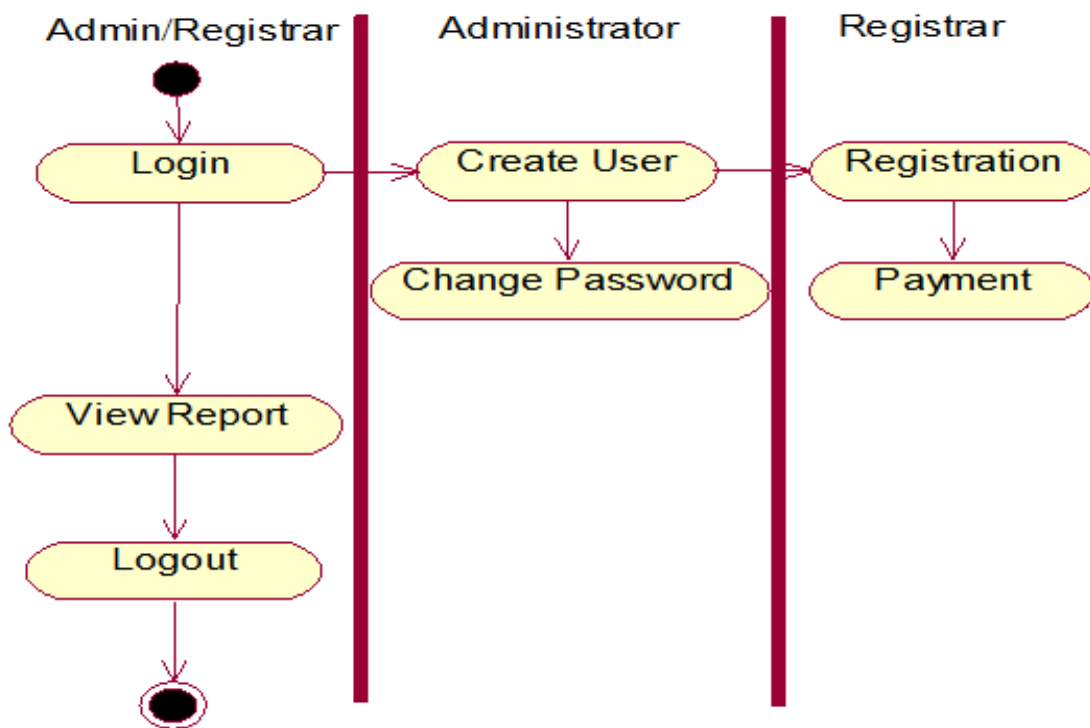
**POST-CONDITIONS**

- The admin and the registrar can see this form after they login to the system.

**CONSTRAINT(S)**

Not applicable.

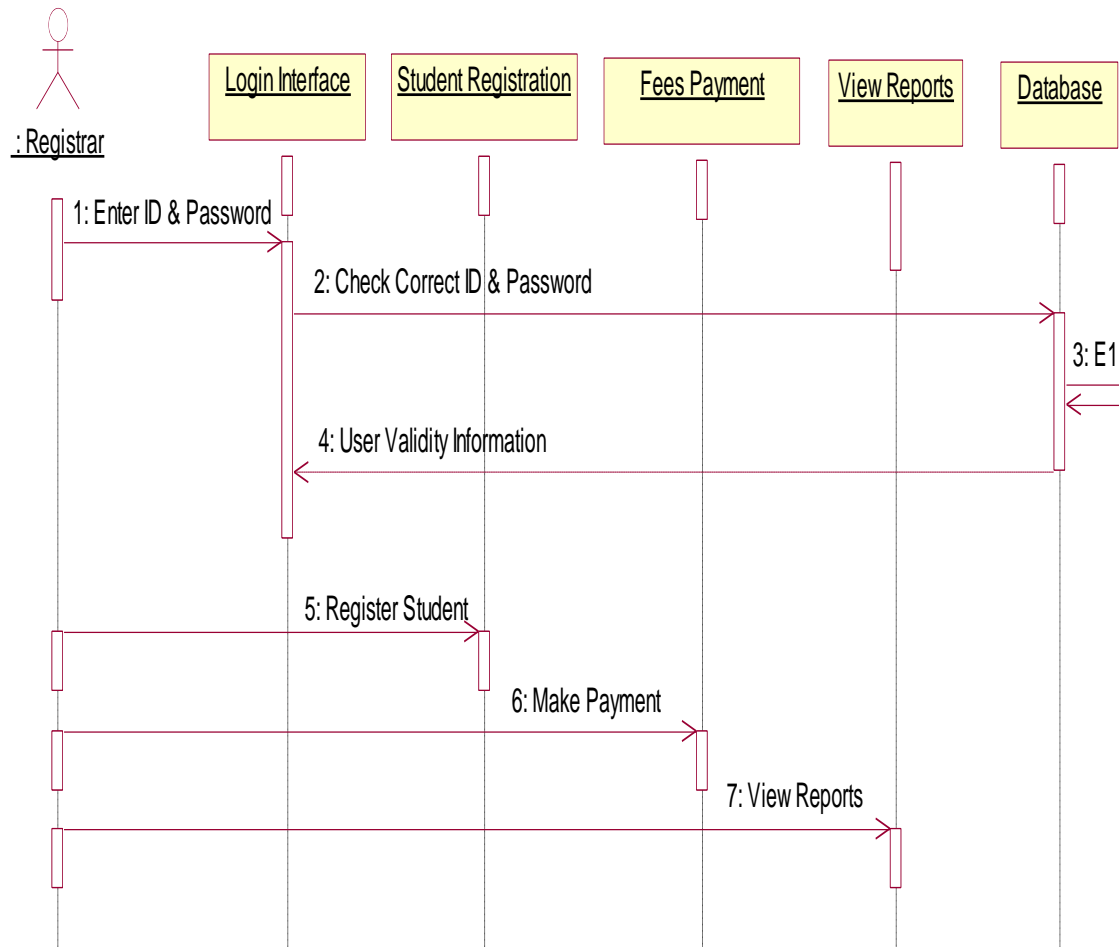
**4.4.2 ACTIVITY DIAGRAM:**



**FIGURE 4.9: ACTIVITY DIAGRAM**

According to Adult Commercial Secondary School, some of the activities can only be made by the administrator. Whereby, the administrator only can create user accounts for staff members as shown in this diagram of the requirement model of ACS School Management System. Also, the registrar should be able to view student report do registration and fee payment only.

#### 4.4.3 SEQUENCE DIAGRAM:



**FIGURE 4.10: SEQUENCE DIAGRAM**

The proposed school management system sequence diagram shows each and every task of the school operations, and the activities are according to the operations needed by the registrar daily activities of the school operations. So the registrar should do these activities in sequence, and before he register student he can't view student report or he can't make payment for a student he didn't register him/her yet.

#### 4.4.4 CLASS DIAGRAM:

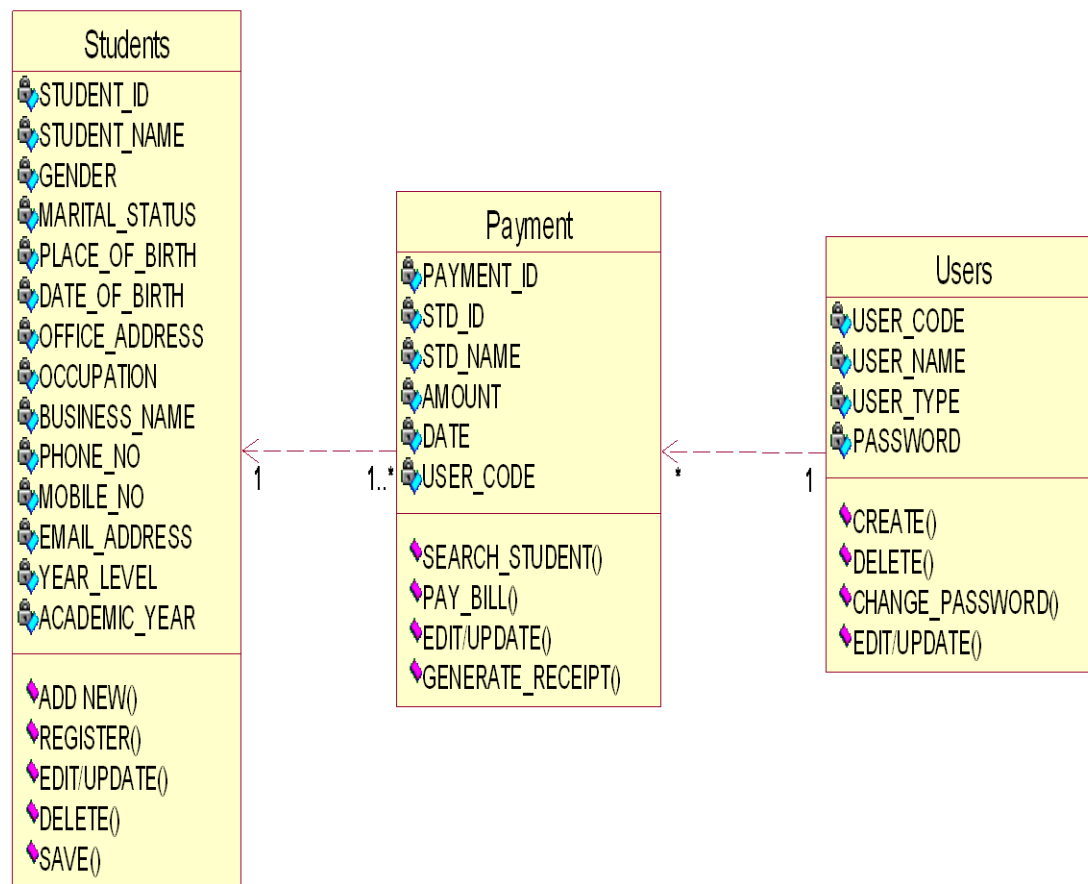


FIGURE 4.11: CLASS DIAGRAM

#### 4.6 CHAPTER SUMMARY:

This chapter discusses the requirement model of ACS School Management System and the list of user requirement (functional and non-functional requirement) was presented in this chapter. Also, the researcher has used the UML tool to design the proposed requirement model for the proposed school management system and some of these tools were discussed in detail in this chapter.

## **CHAPTER FIVE: PROTOTYPE DEVELOPMENT AND EVALUATION**

### **5.0 INTRODUCTION:**

The aim of this chapter is to make clear user-system interaction and to present forms of the implemented system in the school. Therefore, more details about system's forms are provided. Also, the different techniques that were used to evaluate the first released prototype was interview technique that was adopted with the school principle to see his opinion on the first product or version of the prototype which covers some of the main functional requirements been listed in the last chapter. Afterward, the questionnaire technique was adopted to evaluate the this prototype which enable Adult School manage some of the school operations with low cost as well as it provides a convenient tool for their staff to view and search their student information more efficiently.

### **5.1 PROTOTYPE DEVELOPMENT:**

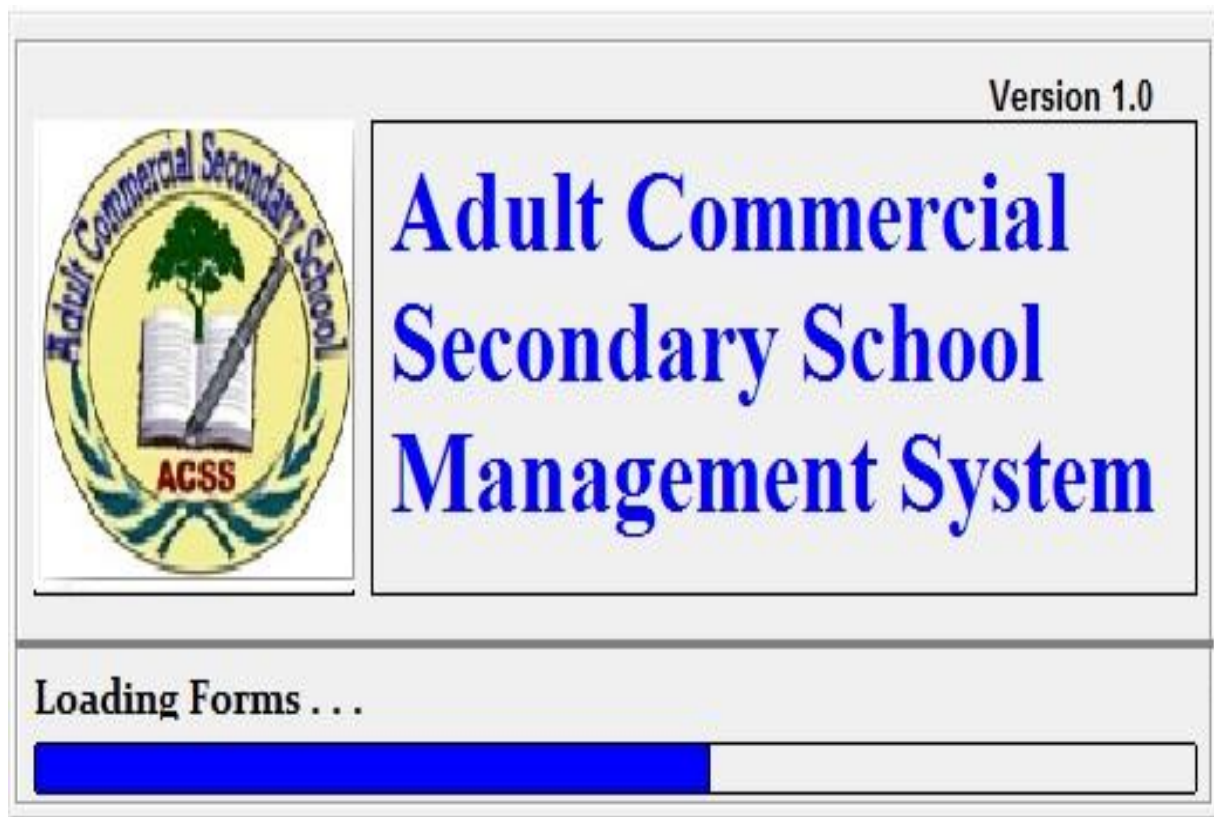
The proposed management information system for Adult Commercial Secondary School has been developed following the *Prototyping*-based methodology. The developed prototype was based on the functionalities given in the last chapter and Microsoft VB 6.0 with Microsoft Access 2007 database was used to develop the prototype. Moreover, the advantage of using Visual Basic as a front end and MS-Access database as a back end of this system is that they can be easily managed and they don't need extra application to install in their computers. Thus, this allows them to manage school system more easily than any other applications and these two applications are affordable and easy to maintain.

#### **5.1.1 USER INTERFACE DESIGN:**

User interface is perhaps the most important part of the application. As a user IT is probably more concerned about the interface rather than the underlying code. Since designing a

user interface is the best approached, as an interactive process in the form of a dialogue between the user and the developer, a perfect design in the pass is a rarity (Stone et al., 2005). Moreover, most of the functions in the application can be executed using only one form. All the section names are presented in the form of Menus as of links. Each of these links presents a section as per the System design (Stone et al., 2005; Lauesen, 2005).

So, the startup form presents as a link to the modules. For entry into the department the user has to supply valid user ID and password to log on to the application. The menu bar has all menus pertaining to the different sections of the particular module and is initially blank. The figures below are some of the screens in this prototype.



**FIGURE 5.1: WELCOME SCREEN**



ADULT COMMERCIAL SECONDARY SCHOOL MANAGEMENT SYSTEM MAIN FORM

File Transactions Tools Report About

**Adult Commercial Secondary School (ACSS)** **مدرسة أدلت الثانوية التجارية**  
Mogadishu - Somalia

**Machadka Maadooyinka Iugu Barto Waxaa Kamid Ah ..**

**BUSINESS MANAGEMENT** **COMMERCIAL** **ENGLISH** **P.O. MARKETING** **COMPUTER** **GENERAL STUDIES** **OFFICE PRACTICE** **FINANCIAL ACCOUNTING** **INTERNET APPLICATIONS**

**ADULT WAA AAS-AASKA FURAHAA AQQONTA**

Admin

**Authentication Form**

USERNAME: Admin

PASSWORD: \*\*\*

OK EXIT

FIGURE 5.2: LOGIN SCREEN

ADULT COMMERCIAL SECONDARY SCHOOL MANAGEMENT SYSTEM MAIN FORM

File Transactions Tools Report About

**Student Registration Form**

**ADULT SCHOOL REGISTRATION FORM**

Student ID: 200412 Student Name: CALI MOHAMED CALI

Gender: Male Marital Status: Married DOB: 3/13/2004

Place Of Birth: HARGEYSA Office Address: KPP Occupation: CASHIER

Business Name: RAMADAAN RESTAUR. Year Level: FOURTH YEAR Academic Year: 2006 - 2008

Phone Number: (00252)-65234324 Mobile Number: (0025)-(324234232) Email Address: cali\_cabdi@hotmail.com

Add New Edit Save Cancel Delete Quit

Record :9 of 19

**FINANCIAL ACCOUNTING** **INTERNET APPLICATIONS**

**ADULT WAA AAS-AASKA FURAHAA AQQONTA**

Admin

FIGURE 5.3: REGISTRATION SCREEN





FIGURE 5.4: CREATE USERS SCREEN



FIGURE 5.5: ABOUT DEVELOPER SCREEN

## **5.2 PROTOTYPE TESTING PHASES:**

This section gives brief introduction of the system testing and discusses the different phases of usability testing of the prototype. Before the first version of the prototype was released to the school, a system testing has been made by the developer, to know whether the system can achieve the customer needs, and the functionality of the system towards the requirement list.

### **5.2.1 SYSTEM TESTING:**

This usability testing and validation of the prototype is aimed at perfecting the system that is been proposed. So, this will assist us to make sure the system can achieve customer needs. In addition, the philosophy behind system testing is to find errors, and during system testing there are two strategies employed by the developer that are code testing and unit testing.

### **5.2.2 CODE TESTING:**

This strategy examines the logic of the program. To follow this method the project developer has checked the code of the system, and during this code testing some codes were resulted errors after every instruction in the program and module was in executing, and every path was tested.

### **5.2.3 UNIT TESTING:**

In this application, the developer has tested the program unit by unit, and each unit in the system was checked alone. Software units in a system are the modules and routines that are assembled and integrated to form a specific function; however unit testing was first done on modules, independent of one another to locate errors. Thus, this enables to detect errors initially and to avoid these errors resulting from interaction between modules.

### **5.3 EVALUATION OF THE PROTOTYPE:**

This section aims to give the reader a brief introduction and a deep understanding of the different tools and techniques been used to evaluate the usability of the prototype in terms of customers satisfaction. Before the first version of the prototype was released to the school use, a system testing has been made by the developer, to know whether the system can achieve the customer needs, and the functionality of the system towards the requirement list. However, the system was also evaluated by the end users or the customers using questionnaire and interview techniques. The next section discusses the different evaluation techniques used to ensure reliability of this prototype.

#### **5.3.1 EVALUATION TECHNIQUES AND RESULTS:**

Generally, there are many evaluation techniques which can be used to evaluate this prototype and evaluation tests the usability, functionality, and acceptability of the proposed school management system. However, the evaluation was conducted to know customer satisfaction of the new system and an interview method was used to evaluate the usefulness of this system. Also, a questionnaire was given to the staff members after they have tested and used the prototype and an analysis was carried out and data was collected using the questionnaire and interview techniques. Frequency and percentage was used for the data analysis, the results shows that, school management information systems have an important contribution to school management although technologic infrastructures of the schools are insufficient and this table below shows the result from respondent of the new school management system prototype. So, here are the questionnaire results in detail. However, the last table shows the overall result of the customer satisfaction in the proposed school management system. Refer to appendix (B) for the questionnaire sample.

**TABLE 6.1: DEMOGRAPHIC DATA RESULTS**

Demographic Data	Frequency	Percentage (%)
<b>Gender</b>		
Male	3	100
Female	0	0.0
<b>Age</b>		
18 - 25 Years old	0	0
26 - 34 Years old	3	100
35 - 44 Years old	0	0

**TABLE 6.2: RESPONDENTS DATA RESULTS**

Question		1	2	3	4	5
Q1	The information presented by the system is easy to understand.					✓
Q2	The services provided by the system are easy to use.				✓	
Q3	I'm satisfied in using the proposed school system.					✓
Q4	This school system provides the kind of content that I'd expect to find.				✓	
Q5	I am satisfied with the proposed school management system to be used in the future.					✓

The above table shows the result from all respondents. So, in section B of the questionnaire the questions presented was more on to the customer's satisfaction of the new proposed school management system. However, as this table shows the respondents agree to have the proposed school management system and all of them put the pen on the number 4 which means Agree and number 5 which is strongly agree. Also, the result in table 6.3 shows the perception of the school manager from the interview been conducted.

**TABLE 6.3: EVALUATION RESULTS**

Percentage (%)	Comment
100%	Agree to have the new proposed school system which includes payment.

## **5.4 FEATURES OF THE PROTOTYPE:**

The new released school management system has the following features which are fully functional:

- Login form which checks different privileges of users and makes verification of username and passwords accurately.
- User's creation and change password forms, however these two tasks can be done by the administrator only as mentioned in chapter four.
- Registration form which enables the school to register new students and update or delete their student related information more easily.
- Validation of all inputs before system process the data, and quick searching of the student's information is also available in this prototype.

## **5.5 CHAPTER SUMMARY:**

This chapter presents different forms of the prototype. Also, the techniques been used by the researcher to evaluate the usability of the prototype. This prototype will simplify some of the school operations and the school activities with an affordable cost and time. In addition to that, the above results of prototype evaluation shows how much the customer is satisfied and the evaluation has been based on the end users perception (Adult School Principle and Registrar) perception to the new system, which provides some features that are very interested by the users and they were satisfied with the functionality of the prototype although there is a need of providing more functionalities in the next product of this system.

## **CHAPTER SIX: CONCLUSIONS AND RECOMMENDATIONS**

### **6.0 INTRODUCTION:**

This is the last chapter in this study and it is a follow-up to the suggested requirement model and the first version of the released prototype that was intended to automate the registration department of Adult Commercial Secondary School. The new system was intended to replace the manual system that was adopted by the school for many years and. Also, the proposed requirement model and the prototype was enough to bring forward a clear view and to guide to any developer in the future to develop this school management system. The main aim of this study was to develop a requirement model and this objective was achieved and was presented in different chapters of this study.

However, due to some constraints the prototype which was developed for the school was not a complete system and it does not fulfill all functional and user's requirement for the proposed school management system. After the development of the prototype using the system analysis and design stage of the methodology as a guide, an evaluation was conducted using questionnaire and interviewing technique.

### **6.1 CONTRIBUTION OF THE STUDY:**

The development of this requirement model was a good starting point for the development of the nationwide school management system in Somalia. I hope that this school system will be considered among the schools in Somalia in the future and the uniqueness of this requirement model is the domain of this study which was carried out in Adult Commercial Secondary School in Somalia. The first product of the prototype covers some of the listed functional requirements that were presented in chapter four.

## **6.2 CONCLUSION AND LIMITATIONS:**

The main objective of this study which was to design a requirement model for the Adult Commercial Secondary School Management System was achieved. However, some of the functional requirement was not included in the prototype that was presented in this study due to some constraints mainly time factor. Thus, any developer can construct the proposed school management system by following the listed user requirements (functional and non-functional requirements) in developing a complete system which has all features been intended to have. However, during this study, there are two main limitations which the researcher has faced and are as followed:

- Lack of availability of the literature about management information systems in schools in Somalia, and limited literature on Adult Commercial Secondary School in Somalia.

## **6.3 RECOMMENDATIONS AND FUTUREWORKS:**

This study was intended to design a requirement model for Adult School System and it mainly focus on the registration and school fee payment processes. So, it is recommended that the management of Adult School should take this opportunity to develop a complete school management system which will reduce processing time and cost, and the future study should include transcription and/or mark processing system, and staff information management systems.

## **6.4 CHAPTER SUMMARY:**

This is the last chapter and it discusses the significance, limitations, future work and recommendations of this study. Thus, this study was a good experience and encouragement for Adult School to develop the proposed school system and manage their school system with low cost as well with a convenient tool for their staff to manage their school operations more efficiently.

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# APPENDIX A: INTERVIEW QUESTIONS



**University Utara Malaysia**

**College of Art and Science**

## **Requirement Model for Adult Commercial Secondary School Management System in Somalia**

The interviews was carried out to understand the existing problem and the user requirements of the proposed school management system. This study was a part of the final project fulfilment for MSc.(IT) course in UUM. Below are the questions asked during the interviews with the Adult Commercial Secondary School manager and staff members.

1. May I know your name and your position, please?
2. Do you use computers to handle school operations?
3. Registration of new student do you use a computerized system to handle it?
4. Normally, how do you manage students registration process?
5. What kind of problems you face when handling registration process?
6. How you handle when making school fee payment processes?
7. If new system is developed, what are the functions that you want this system to do?

# APPENDIX B:

# QUESTIONNAIRE

# SAMPLE



University Utara Malaysia

College of Art and Science

## Requirement Model of School Management System for Adult Commercial Secondary School in Somalia

### SECTION A: Demographic Background

*Please kindly tick (✓) your answers to the given statements.*

GENDER :

☐ Male.

☐ Female.

AGE :

☐ 18-25 Years old.    ☐ 26-34 Years old.    ☐ 35-44 Years old.    ☐ 44-54 Years old.

☐ Above 55 Years old.

## SECTION B: Visual Aspects of the Application Satisfaction

*Please check the appropriate column. The numbers 1 to 5 represent the following:*

1= Strongly Disagree. 2= Disagree. 3= Not Sure. 4= Agree. 5= Strongly Agree.

Question		1	2	3	4	5
Q1	The information presented by the system is easy to understand.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q2	The services provided by the system are easy to use.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q3	I'm satisfied in using the proposed school system.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q4	This school system provides the kind of content that I'd expect to find.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q5	I am satisfied with the proposed school management system to be used in the future.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## SYSTEM REQUEST

**Project Name:** School Management System.

**Project Sponsor:** Abdiaziz Agane Abdisamad, School Principal.

**Phone:** +2526-1-859911/653439/870403.

**E-mail:** [adultschool@hotmail.com](mailto:adultschool@hotmail.com)

**Business name:** Adult Commercial Secondary School.

**Business need:** To improve school daily operations by implementing a computerized school management system.

### Functionality:

Using the proposed school management system, Adult staff should be able to manage school operations more efficiently. The initial focus should be on registration and fee payment. But we also consider the other activities (e.g., storing exam results for transcription processing and staff information management in the future). However, now, staff should be able to:

- Make registration of new students more easily.
- Make fee payment and receive immediate receipts approval.
- View student reports based on year level, classes and those who pay/not pay the fees.
- Search student related information and update or delete student related information.
- Create new user account for staff members and change password mechanisms.

### Expected Value:

Tangible:

- ❖ A 75% to 95% decrease of data loss in annual school operations after the business has been operating for 2 to 3 years.

Intangible:

- ❖ Improved customer satisfaction.

### Special issues or Constraints:

- ☆ The registration department views this as strategic system. So, the system should be in place for the coming school intake next year.